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**DEPARTMENT OF TRANSPORTATION**

**Pipeline and Hazardous Materials Safety Administration**

**[Docket No. PHMSA-2012-0039]**

**Pipeline Safety: Cast Iron Pipe (Supplementary Advisory Bulletin)**

**AGENCY:** Pipeline and Hazardous Materials Safety Administration (PHMSA), DOT.

**ACTION:** Notice; Issuance of Advisory Bulletin.

**SUMMARY:** PHMSA is issuing an advisory bulletin to owners and operators of natural gas cast iron distribution pipelines and state pipeline safety representatives. Recent deadly explosions in Philadelphia and Allentown, Pennsylvania involving cast iron pipelines installed in 1942 and 1928, respectively, gained national attention and highlight the need for continued safety improvements to aging gas pipeline systems. This bulletin is an update of two prior Alert Notices (ALN-91-02; October 11, 1991 and ALN-92-02; June 26, 1992) covering the continued use of cast iron pipe in natural gas distribution pipeline systems. This advisory bulletin reiterates two prior Alert Notices which remain relevant, urges owners and operators to conduct a comprehensive review of their cast iron distribution pipelines and replacement programs and accelerate pipeline repair, rehabilitation and replacement of high-risk pipelines, requests state agencies to consider enhancements to cast iron replacement plans and programs, and alerts

owners and operators of the pipeline safety requirements for the investigation of failures. In addition, the latest survey and reporting requirements of cast iron pipelines required by the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 are included for information.

**ADDRESSES:** This document can be viewed on the Office of Pipeline Safety home page at: <http://ops.dot.gov>.

**FOR FURTHER INFORMATION CONTACT:** Jeff Gilliam, Director, Engineering and Research, 202-366-0568 or by e-mail at [Jeffery.Gilliam@dot.gov](mailto:Jeffery.Gilliam@dot.gov).

## **SUPPLEMENTARY INFORMATION:**

### **I. Background**

On January 18, 2011, an explosion and fire caused the death of one gas utility employee and injuries to several other people while gas utility crews were responding to a natural gas leak in Philadelphia, PA. A preliminary investigation found a circumferential break on a 12-inch cast iron distribution main that was installed in 1942, and was operating at 17 pounds per square inch gauge (psig) pressure at the time of incident. An investigation continues toward finding the cause.

On February 9, 2011, five people lost their lives and a number of homes were destroyed and other properties impacted by an explosion and subsequent fire in Allentown, PA. A preliminary investigation found a crack in a 12-inch cast iron natural gas distribution main that was installed in 1928, and was operating at less than 1 psig at the time of incident. The crack was located below grade near the destroyed homes. An investigation continues toward finding the cause.

#### Alert Notice (ALN-91-02)

On October 11, 1991, PHMSA's predecessor agency, the Research and Special Programs Administration (RSPA), issued Pipeline Safety Alert Notice (ALN-91-02) alerting pipeline operators of National Transportation Safety Board recommendation P-91-12 in response to the August 1990 explosion and fire in Allentown, PA, caused by a crack in a 4-inch cast iron gas main. The recommendation stated:

“Require each gas operator to implement a program, based on factors such as age, pipe diameter, operating pressure, soil corrosiveness, existing graphitic damage, leak history, burial depth, and external loading, to identify and replace in a planned, timely manner cast iron piping systems that may threaten public safety.”

The Alert Notice informed distribution pipeline operators with cast iron pipe of the following:

- The Gas Piping Technology Committee developed guide material to assist them in developing procedures for determining the serviceability of the cast iron pipe and to identify the cast iron pipe segments that may need replacement.
  - Computer programs are commercially available that can be used to develop a systematic replacement program for cast iron pipe.
  - Pipeline safety regulations require that cast iron pipe on which general graphitization is found to a degree where a fracture might result must be replaced. In addition, the regulations require that cast iron pipe that is excavated must be protected against damage.
- An operator's compliance with the above guidelines and code requirements can be enhanced by incorporating all of the operator's cast iron responsibilities in an effective cast iron management program that is designed to identify and replace or remove from service cast iron pipe that may threaten the public.

#### Alert Notice (ALN-92-02)

On June 26, 1992, RSPA issued a Pipeline Safety Alert Notice (ALN-92-02) as a Supplementary Alert Notice to the 1991 Alert Notice. The Supplementary Alert Notice reminded pipeline operators of the requirement at 49 CFR 192.613 that each operator have a procedure for continuing surveillance of its pipeline facilities to identify problems and take appropriate action concerning failures, leakage, history, corrosion, and other unusual operating and maintenance conditions. This procedure should also include surveillance of cast iron to identify problems and to take appropriate action concerning graphitization.

## **II. Advisory Bulletin (ADB-2012-05)**

**To:** Each Owner and Operator of a Natural Gas Cast Iron Distribution Pipeline Facility and State Pipeline Safety Representatives.

**Subject:** Cast Iron Pipe (Supplementary Advisory Bulletin).

**Purpose:** To Address Continued Concerns Rising Out of Recent Cast Iron Incidents.

**Advisory:**

On October 11, 1991, Alert Notice (ALN-91-02) was issued reminding all operators of natural gas distribution systems to have a program to identify and replace cast iron piping systems that may threaten public safety. RSPA also informed operators of guidelines and computer programs that were available to help operators determine the serviceability of cast iron pipe and schedule its replacement or retirement. On June 26, 1992, Alert Notice (ALN-92-02) was issued informing pipeline operators that § 192.613 required each operator to have a procedure for continuing surveillance of its pipeline facilities to identify problems and take appropriate action concerning failures, leakage, history, corrosion, and other unusual operating and maintenance conditions. This procedure should also include surveillance of cast iron to identify problems and to take appropriate action concerning graphitization. The two Alert Notices remain relevant, and

reaffirm the need for operators of gas cast iron distribution systems to maintain an effective cast iron management program.

PHMSA urges owners and operators to conduct a comprehensive review of their cast iron distribution pipeline systems and replacement programs and to accelerate pipeline repair, rehabilitation, and replacement of aging and high-risk pipe. Recent incidents, such as the deadly explosions in Philadelphia and Allentown, Pennsylvania involving cast iron pipe failures, have focused attention on our Nation's aging pipeline infrastructure and underline the importance of having valid methods for evaluating the integrity of pipelines to better ensure public safety. PHMSA recommends owners and operators of natural gas cast iron pipelines assure their replacement program models are based on relevant risk factors.

In addition, PHMSA reminds owners and operators of cast iron distribution pipelines of their responsibility for the investigation of all failures and that each operator must establish procedures for analyzing incidents and failures, including laboratory examination of failed pipe segments and equipment, where appropriate, for the purpose of determining the causes of the failure and minimizing the possibility of a recurrence [192.617]. Owners and operators are required to review pipeline records, validate safe pipeline operating pressure levels and accelerate repairs and replacement where improvements in safety are necessary. The Distribution Integrity Management Program (DIMP) requires natural gas distribution companies to develop and implement DIMP for the pipelines they own, operate or maintain.

PHMSA is asking owners and operators of cast iron distribution pipelines and state pipeline safety representatives to consider the following where improvements in safety are necessary:

- Request, review and monitor operator cast iron replacement plans and programs, actively encourage operators to develop and continually update and follow their plans, and consider establishment of mandated replacement programs.
- Establish accelerated leakage survey frequencies or leak testing considering results from failure investigations and environmental risk factors.
- Focus pipeline safety efforts on identifying the highest risk pipe.
- Use rate adjustments and flexible rate recovery mechanisms to incentivize pipeline rehabilitation, repair and replacement programs.
- Strengthen pipeline safety inspections, accident investigations and enforcement actions.
- Install interior/home methane gas alarms.

The Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011, was signed into law (PL 112-90) on January 3, 2012. Section 7 of the new law requires the U.S. Department of Transportation to measure every two years the progress that owners and operators of pipeline facilities have made in adopting and implementing their plans for the safe management and replacement of cast iron gas pipelines. Additionally, not later than December 31, 2013, the Secretary of Transportation must submit to Congress a report that — (1) identifies the total mileage of cast iron gas pipelines in the United States; and (2) evaluates the progress that owners

and operators of pipeline facilities have made in implementing their plans for the safe management and replacement of cast iron gas pipelines.

PHMSA is committed to working with owners and operators of natural gas cast iron distribution pipelines and state pipeline safety representatives to ensure our Nation's pipeline infrastructure is safe and well-maintained.

Issued in Washington, DC on \_March 20, 2012.

Jeffrey D. Wiese,

Associate Administrator for Pipeline Safety.